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A PRINCIPLE GOVERNING DELETION IN ENGLISH SENTENTIAL COMPLEMENTATION.

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A CHARACTERISTIC PROPERTY OF CERTAIN TYPES OF SENTENCE EMBEDDING IN ENGLISH IS THE DELETION OF THE INITIAL NOUN PHRASE OF THE EMBEDDED SENTENCE WHEN THE NOUN PHRASE IS IDENTICAL TO SOME NOUN PHRASE IN THE MAIN SENTENCE. EXAMPLES OF THIS PHENOMENON ARE SENTENCES LIKE "JOHN CONDESCENDED TO GO" AND "JOHN DEFIED BILL TO GO." BECAUSE THE DISTRIBUTION OF THE RELEVANT NOUN PHRASE IN THE MAIN SENTENCE WITH RESPECT TO THE EMBEDDED SENTENCE VARIES, THE DELETION CANNOT EASILY BE SPECIFIED IN TERMS OF A SINGLE TRANSFORMATION. THE PRINCIPLE OF MINIMAL DISTANCE IS ADVANCED TO EXPLAIN NOUN PHRASE DELETION IN EMBEDDED SENTENCES AS A SINGLE SYNTACTIC PROCESS. (KL)

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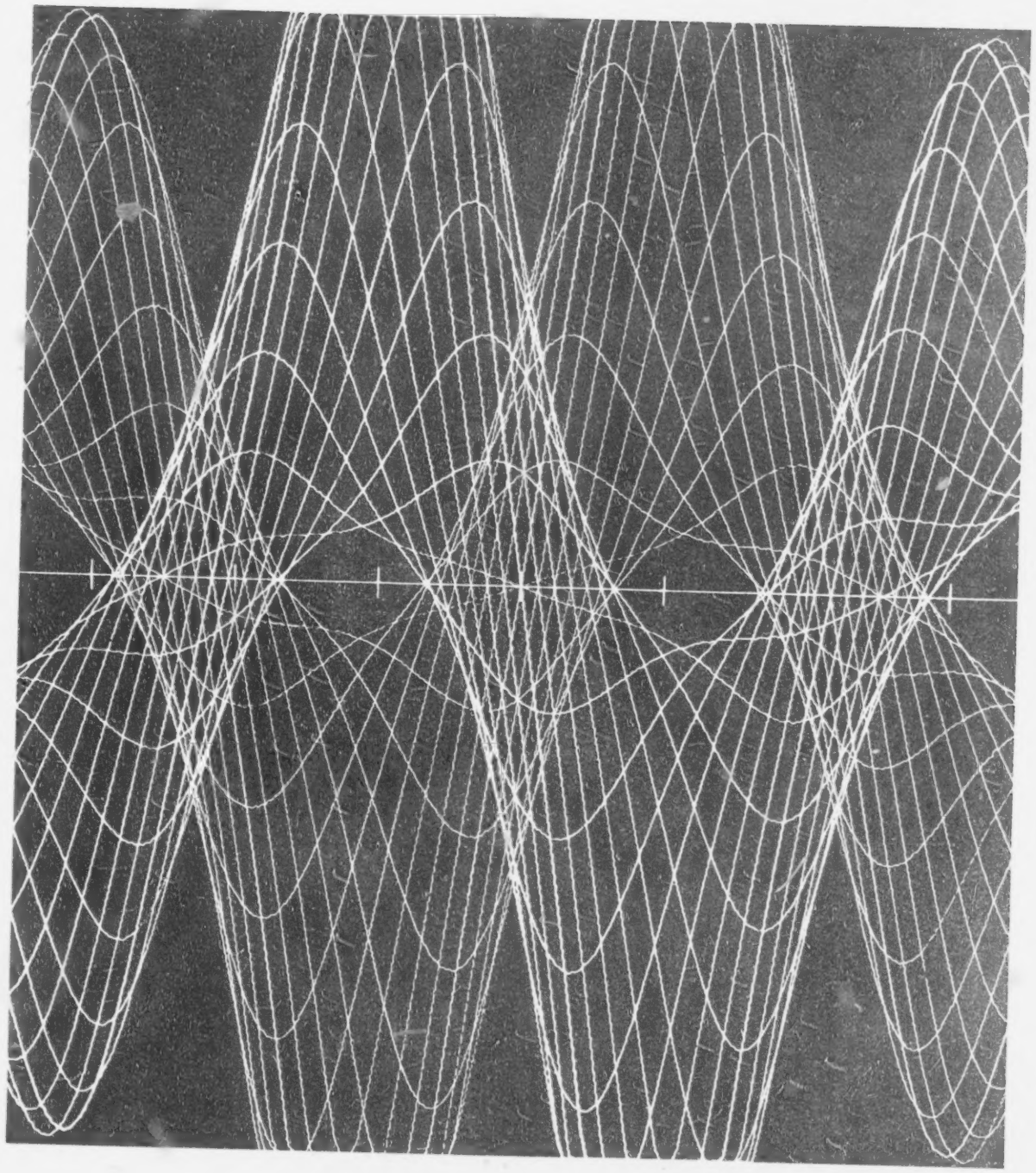

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Peter S. Rosenbaum

December 22, 1965

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A PRINCIPLE GOVERNING DELETION IN ENGLISH SENTENTIAL COMPLEMENTATION*

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ABSTRACT: A characteristic property of certain types of sentence embedding in English is the deletion of the initial Noun Phrase of the Embedded Sentence when this Noun Phrase is identical to some Noun Phrase in the Main Sentence. Exemplifying this phenomenon are such sentences as the following:

(1) John condescended to go
(2) John defied Bill to go
(3) seeing you there caused Bill to wonder

Since the distribution of the relevant Noun Phrase in the Main Sentence relative to the Embedded Sentence is variable, it is difficult, if not impossible, to specify the deletion in terms of a single transformation. Thus the grammar fails to characterize initial Noun Phrase deletion as a unified phenomenon.

The incorporation of a Principle of Minimal Distance into the linguistic theory leads to a grammatical formulation in which initial Noun Phrase deletion in Embedded Sentences can be explained as a single syntactic process. Essentially, the Principle asserts that the Noun Phrase in the Main Sentence which must be identical to the initial Noun Phrase of the Embedded Sentence is that Noun Phrase which is least distance from the initial Noun Phrase of the Embedded Sentence (where distance is defined in terms of the number of phrase structure branches) providing that the Noun Phrase in the Main Sentence does not dominate the initial Noun Phrase of the Embedded Sentence.

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A characteristic property of certain types of sentence embedding in English, the general process of which I shall subsequently refer to as Sentential Complementation, is the deletion of the initial Noun Phrase of the Sentential Complement. Exemplifying this phenomenon are such sentences as the following:

(1) John condescended to go

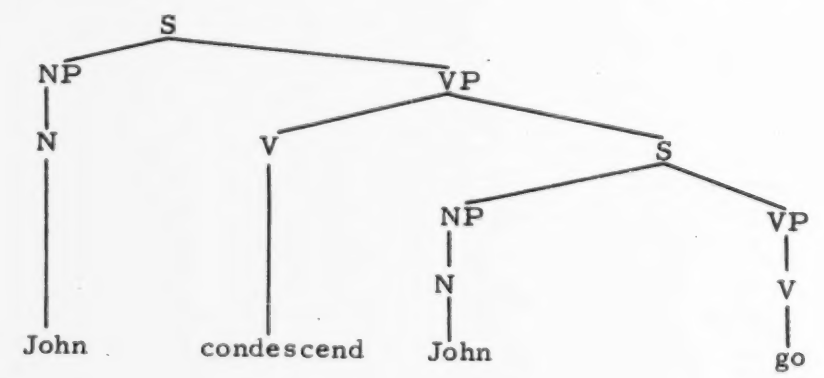
(2) John defied Bill to go

(3) seeing you there caused Bill to wonder

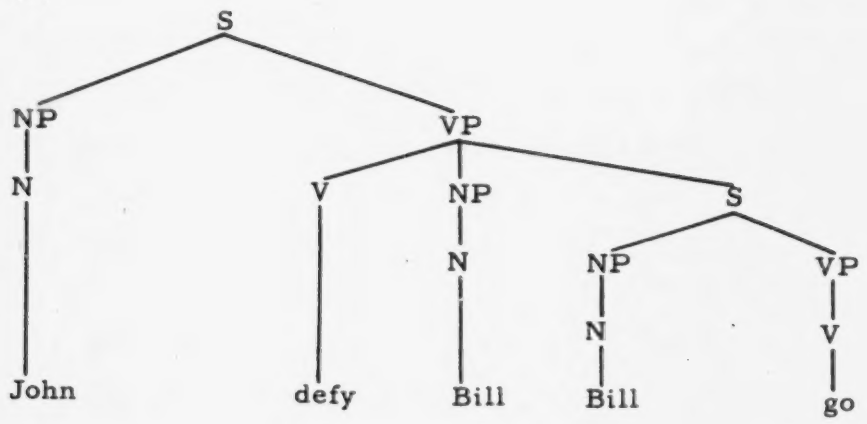
The infinitival constructions in these three sentences and the gerundive construction in sentence (3) are the residue of more complete sentences which have been embedded and systematically altered. A speaker of English will ordinarily have no difficulty in identifying the implicit initial Noun Phrase of the embedded sentences. For example, the deleted Noun Phrase in sentence (1) i.e., the underlying Subject of the Sentential Complement "John go," must be "John." The deleted Noun Phrase in the Sentential Complement of sentence (2) is "Bill." Finally, the deleted Noun Phrase in both the gerundive and infinitival Sentential Complements of sentence (3) is "Bill." Two conclusions may be drawn from these observations. First, the identified Noun Phrases must be present in the structure underlying the example sentences, in the "deep structure" in Chomsky's sense. Second, the identity of these Noun Phrases with some Noun Phrase in the Main Sentence is a necessary condition for deletion. It is also apparent, however, that this identity relation is not a sufficient condition for deletion since the distribution of the relevant Noun Phrase in the Main Sentence relative to the Sentential Complement is variable. Thus, a sufficient condition for determining the deletion must specify which Noun Phrase in the Main Sentence must be identical to the initial Noun Phrase of the Sentential Complement in order for the deletion to proceed. The purpose of the following discussion is to consider the properties of such a condition.

Sentences (1), (2), and (3) by no means exhaust the constructions which exemplify the phenomenon of the initial Noun Phrase deletion in Sentential Complementation. Nonetheless, they represent extremely productive distributions and a more detailed analysis just of these cases will prove informative. Sentences (1) and (2) are instances of what I call Verb Phrase Complementation, where a Sentential Complement S is immediately dominated by VP in the underlying phrase structure. In sentence (1), the Verb "condescend" is intransitive and is contiguous with a Sentential Complement[1]. In sentence (2), the Verb "defy" is transitive and an Object Noun Phrase "Bill" intervenes between the Verb and the Sentential Complement. The underlying structure of these two sentences can be roughly represented in terms of the following diagrams:

(4)

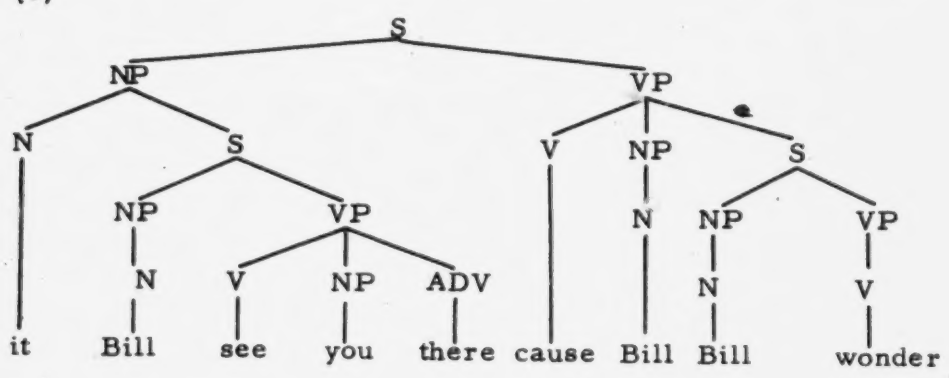


(5)



Sentence (3) is but a special case of Transitive Verb Phrase Complementation in which the underlying Subject of the Main Sentence is itself an instance of Noun Phrase Complementation. In Noun Phrase Complementation, the constituent NP immediately dominates the Sentential Complement. Among the reasons for assigning this analysis to the phrase "seeing you there" in sentence (3) are 1) the fact that this phrase undergoes passivization and 2) the fact that this phrase participates in the pseudo-cleft sentence construction, i.e., "what caused Bill to wonder was seeing you there." The diagram (6) presents the phrase structure which underlies sentence (3).

(6)



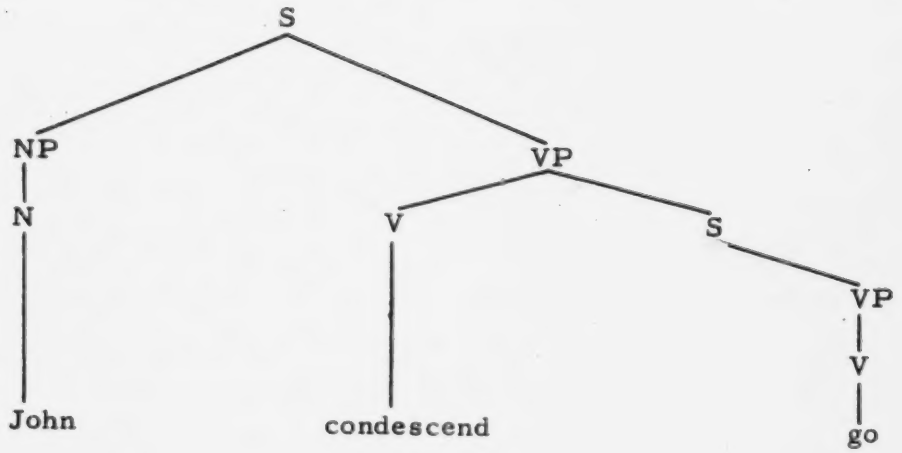
In the light of the structures which underlie sentences (1), (2), and (3), it is possible to observe precisely which Noun Phrase in the Main Sentence must be identical to the initial Noun Phrase of the Sentential Complement when the deletion of the latter is defined. For sentence (1), the initial Noun Phrase of the Sentential Complement must be identical to the underlying Subject Noun Phrase of the Main Sentence. For sentence (2), the initial Noun Phrase of the Sentential Complement must be identical to the underlying Object Noun Phrase of the Main Sentence. Similarly, for the initial Noun Phrase of the Noun Phrase Sentential Complement and for the initial Noun Phrase of the Verb Phrase Sentential Complement in sentence (3), the relevant Noun Phrase in the Main Sentence is the Object Noun Phrase.

As a first approximation to a description of initial Noun Phrase deletion in the three sentences under study, we might consider three distinct transformational rules of the following form:

(7)

X	NP_1	V	$[NP_2$	$VP]_S$	Y
1	2	3	4	5	6====>
1	2	3	Ø	5	6

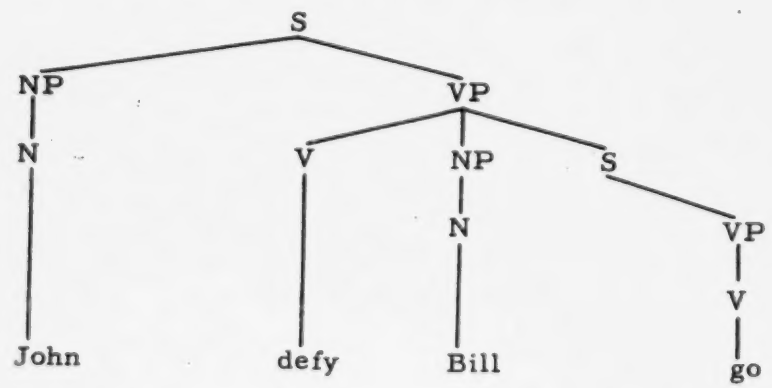
This rule applies to the structure presented in diagram (4) and yields the following structure:



(8)

X	NP	V	NP_1	$[NP_2$	$VP]_S$	Y
1	2	3	4	5	6	7====>
1	2	3	4	∅	6	7

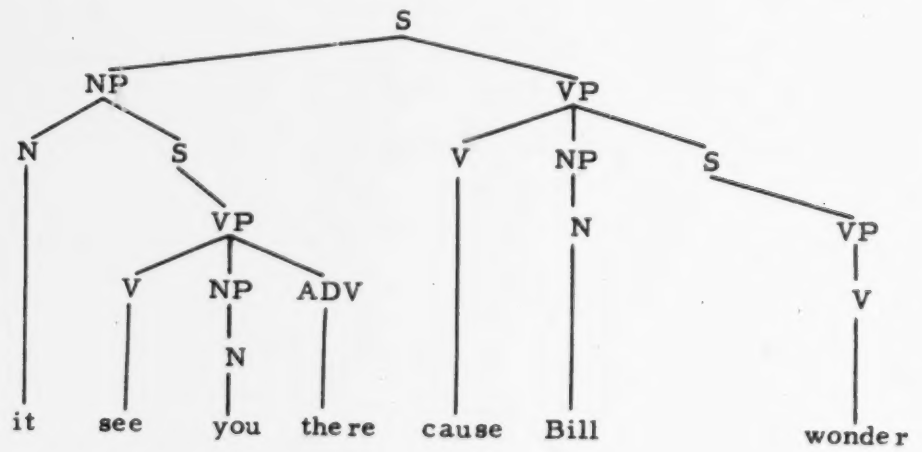
This rule applies to the structure represented in diagram (5) and yields the following structure:



(9)

X	$[NP_1$	$VP]_S$	V	NP_2	Y
1	2	3	4	5	6====>
1	∅	3	4	5	6

This rule applies to the structure represented in (6) and, along with rule (8), operates on this structure to yield the following structure:



In the event that NP_1 is identical to NP_2 in each of the structures upon which these transformations are defined, the transformation (7) applies to an underlying structure of the form specified in (4) to delete the initial Noun Phrase of the Sentential Complement, the transformation (8) applies to an underlying structure of the form given in (5) to delete the same element, and the transformations (8) and (9) apply to the structure (6) to delete the initial Noun Phrases of both the Noun Phrase Sentential Complement (by rule (9)) and the Verb Phrase Sentential Complement (by rule (8)).

The transformational rules (7), (8), and (9) are empirically adequate in the sense that they correctly describe the deletion

of the initial Noun Phrase in the Sentential Complements under study. But it is equally clear that the failure of these rules to describe initial Noun Phrase deletion as a unified phenomenon in English leaves an important generalization unexpressed. This problem can be seen clearly by comparing the rules (7), (8), and (9) with three distinct, but empirically motivated rules, the Pronoun Deletion Transformation which relates (10a) and (10b), the Indirect Object Inversion Transformation which relates (11a) and (11b), and the Particle Placement Transformation which relates (12a) and (12b).

(10)

X	IT	S	Y
1	2	3	4====>
1	Ø	3	4

a. I guarantee it that John is right

b. I guarantee that John is right

(11)

X	V	NP	to+NP	Y
1	2	3	4	5====>
1	2	Ø	4+3	5

a. I gave the book to John

b. I gave John the book (assuming the subsequent deletion of "to")

(12)

X	V	PRT	NP	Y
1	2	3	4	5====>
1	2	Ø	4+3	5

a. I looked up it in the dictionary

b. I looked it up in the dictionary

The rules (10), (11), and (12) are quite distinct with respect to the structures upon which they are defined. Furthermore, these rules perform different operations upon the appropriate structures. In these two respects, the transformations (10), (11), and (12), considered as a group, are very much different from the transformations (7), (8), and (9) similarly considered. Not only do the latter rules operate upon very similar structures, in particular upon Sentential Complement structures; they furthermore perform exactly the same operation upon these structures, namely, these rules delete the initial Noun Phrase of a Sentential Complement. In other words, rules (7), (8), and (9) are describing essentially a single syntactic process whereas rules (10), (11), and (12) are describing three distinct processes. The generalization implicit in rules (7), (8), and (9) is not expressible within the present theoretical framework of transformational grammar since this framework does not value rules (7), (8), and (9) more highly than the rules (10), (11), and (12). This shortcoming is reflected in the impossibility of collapsing rules (7), (8), and (9) into a single rule. Since the theory furthermore provides no evaluative function which is capable of differentiating between the two groups of rules in such a fashion as to indicate that the group of rules (7), (8), and (9) involves a linguistically significant generalization whereas the group of rules (10), (11), and (12) does not, the theory is lacking in a crucial respect. (It is interesting that the application of the familiar notational conventions, i.e., simplicity, leads to the false conclusion that the rules (10), (11), and (12) are more general than the rules (7), (8), and (9).) We require, therefore, a new dimension to the theory of grammatical descriptions which will allow an explicit expression of the

generalization involved in determining the deletion of initial Noun Phrases in Sentential Complements.

Consider now how a more natural and revealing expression of the process of initial Noun Phrase deletion might be developed. Reviewing the underlying structure represented in (5), the phrase marker which roughly underlies sentence (2), one observes that the Main Sentence contains two Noun Phrases, the Subject Noun Phrase "John" and the Object Noun Phrase "Bill." The problem is to specify which of these Noun Phrases must be identical to the initial Noun Phrase of the Sentential Complement in order for deletion to be defined. In this case the facts at least are clear. The Object Noun Phrase of the Main Sentence is the only possible candidate. If we were to make the contrary assumption, namely that the initial Noun Phrase of the Sentential Complement must be identical to the Subject Noun Phrase, we should then be led to predict that speakers of English will interpret the implicit initial Noun Phrase of the Sentential Complement in sentence (2) as "John." In other words, this formulation requires that we assume the initial Noun Phrase of the Sentential Complement to have been "John." This prediction is entirely contrary to the facts. The deleted initial Noun Phrase is uniquely understood to be "Bill." The identity relation must, therefore, obtain only between the initial Noun Phrase of the Sentential Complement and the Object Noun Phrase of the Main Sentence.

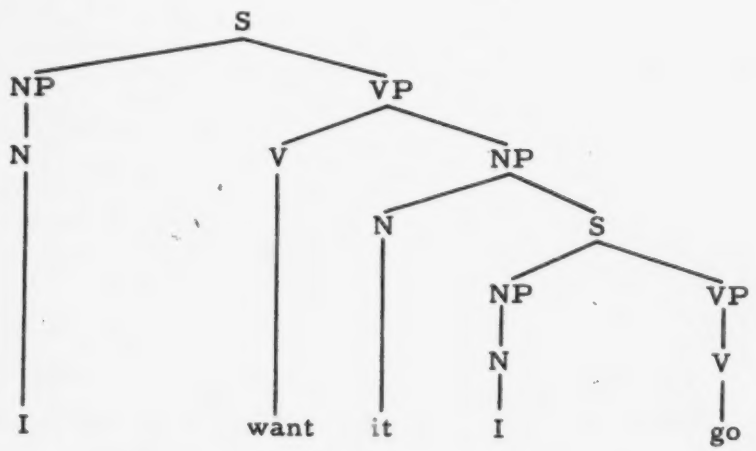
The generalization that determines which of the two Noun Phrases in the Main Sentence must be identical to the initial Noun Phrase of the Sentential Complement can be expressed in terms of a Principle of Minimal Distance (henceforth PMD). In the underlying phrase structure diagram (5), one observes that the Noun Phrase in the Main Sentence which is relevant, i.e., the Object Noun Phrase, is also that Noun Phrase which is least distant from the initial Noun Phrase of the Sentential Complement. Distance here can be naturally defined in terms of the underlying phrase structure itself by making reference to the number of branches in the path which separates the NP nodes in the Main Sentence from the initial NP node in the Sentential Complement.[2] Thus, in diagram (5) for example, the number of branches separating the Subject Noun Phrase of the Main Sentence from the initial Noun Phrase of the Sentential Complement is 4. The number of branches separating the Object Noun Phrase of the Main Sentence, the relevant Noun Phrase, from the initial Noun Phrase of the Sentential Complement is 3. The Principle correctly predicts that the Object Noun Phrase of the Main Sentence is the Noun Phrase which must be identical to the initial Noun Phrase of the Sentential Complement. Sentence (1) reveals a special case of the Principle. In this instance, the Subject Noun Phrase of the Main Sentence is the only Noun Phrase in the Main Sentence and is, therefore, the least distant from the initial Noun Phrase of the Sentential Complement.

There is apparently only one general restriction on the PMD and this restriction becomes clear upon examination of the underlying phrase structure given in (6), which underlies

sentence (3). In this structure one observes that the Noun Phrase in the Main Sentence which is least distant from the initial Noun Phrase in the Noun Phrase Sentential Complement is a Noun Phrase which itself dominates the initial Noun Phrase of the Sentential Complement. It is a general fact that a Noun Phrase which dominates an initial Noun Phrase of a Sentential Complement is never relevant to the deletion of this initial Noun Phrase. As further evidence supporting this claim, consider the sentence (13) which has the underlying structure given in (14).

(13) I want to go

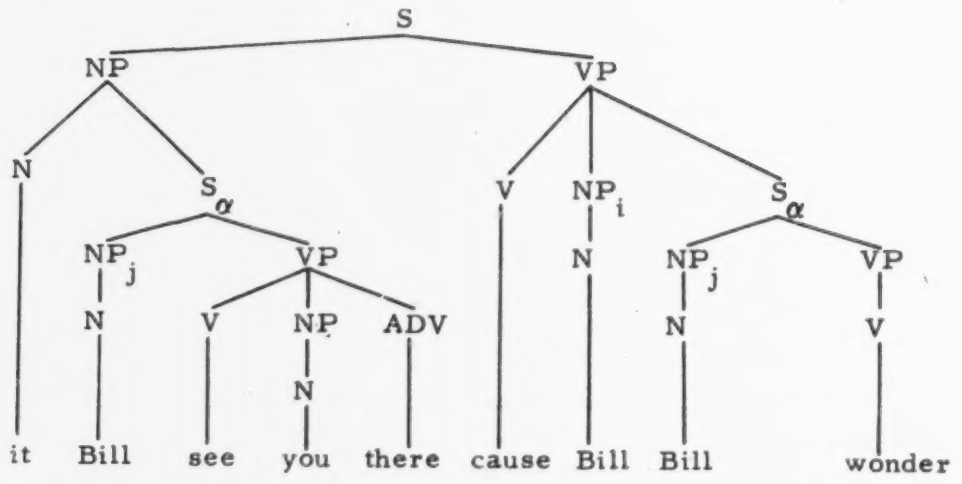
(14)



It follows from this observation that a PMD must specifically exclude any Noun Phrase in a Main Sentence which dominates the initial Noun Phrase of a Sentential Complement.

We thus arrive at a principle which might be semi-formalized as follows (with the phrase marker (15) providing a model):

(15)



An NP_j (e.g., the initial Noun Phrase of either embedded S in (15)) is erased by an identical NP_i (e.g., the Object Noun Phrase of the Main Sentence in (15)) if and only if there is an S_α (e.g., either embedded S in (15)) such that

(i) NP_j is dominated by S_α

(ii) NP_i neither dominates nor is dominated by S_α

(iii) for all NP_k neither dominating nor dominated by S_α (e.g., the Subject Noun Phrase of the Main sentence in (15)), the distance between NP_j and NP_k is greater than the distance between NP_j and NP_i where distance between two nodes is defined in terms of the number of branches in the path connecting them.

The PMD expresses the actual generalization that is involved in determining the initial Noun Phrase deletion under discussion and leads to a grammar of English in which the mechanism required to describe the deletion of inital Noun Phrases is more highly valued than the group of rules (10), (11), and (12). To put it another way, the Principle leads to

a direct reflection in the grammar of the significant generalization involved in initial Noun Phrase deletion by allowing a description of the deletion in terms of a single transformational rule, namely (16).[3] In other words, initial Noun Phrase deletion in all distributions is treated as a single syntactic process.

(16)

W	(NP)	X	{for / Poss}	NP	Y	(NP)	Z
1	2	3	4	5	6	7	8====>

(i) 5 is erased by 2

(ii) 5 is erased by 7

where a constituent A is erased by a constituent B, e.g., A====>Ø, just in case A and B meet the conditions imposed by the Principle of Minimal Distance.

For illustrative purposes, consider the underlying phrase structure (15). Since the initial Noun Phrase of the Noun Phrase Sentential Complement (Index 5) and the Object Noun Phrase of the Main Sentence (Index 7) meet the conditions imposed by the PMD, the former is deleted. Since the initial Noun Phrase of the Verb Phrase Sentential Complement (also Index 5) and the Object Noun Phrase of the Main Sentence (Index 2) meet the necessary conditions, the former is deleted.

It is quite likely that the PMD as stated earlier is but a special case of a General Principle of Minimal Distance. Such a possibility follows from the observation that if the terms of the Principle include not only NP, but N, VP, and V, then one discovers that the Principle (in its general sense) offers a natural explanation for the identity requirements of relative clause formation and for similar requirements in many instances of Verb and Verb Phrase ellipsis. But the further generalization of the Principle is another topic, one which will require careful study. Suffice it to say that a Principle of Minimal Distance, even in its restricted sense, allows a unified syntactic description of initial Noun Phrase deletion in Sentential Complement constructions which is empirically adequate for a very wide range of such constructions. There are apparent exceptions to the Principle, but it is too early to determine whether the fault lies with the Principle or with the analyses ascribed to these exceptions. The important fact is that a Principle of Minimal Distance, even though it may not supply us with a sufficiently broad basis for the theoretical presentation of all identity-deletion phenomena, still must be accorded a considerable measure of "truth" since it provides for a correct description of a great number of cases.[4] Furthermore, and perhaps most important, if such a Principle (or something very much like it) is not valid, that is, if a linguistic theory does not include such a principle, the theory predicts, in effect, that the deletion of initial Noun Phrases in Sentential Complements will be, for all natural languages, unsystematic, dependent upon distribution at best and upon lexical subcategorization at worst, and essentially random. For English, at least, this prediction is not supported by the facts. This is a strong argument in favor of a Principle of Minimal Distance.

1. The reasons for assigning these analyses are discussed in considerable detail in P. S. Rosenbaum, Grammar of English Predicate Complement Constructions, (in preparation).

2. It is important to remember that the underlying structures assigned to the sentences under study are motivated quite independently of the Principle of Minimal Distance. In other words, alternative analyses yield unfortunate empirical consequences which have nothing whatever to do with considerations of deletion.

3. The inclusion of the Complementizing Morphemes "for" and "POSS" (infinitival and gerundive) is necessary in any adequate formulation since the deletion of the initial Noun Phrase of Sentential Complements is restricted to these distributions.

4. These constructions are documented in Rosenbaum, Grammar .....